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Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

1. (currently amended) An image processing apparatus comprising:

a converting unit that performs color conversion of input data, wherein the input data is color data obtained from previous measurement of a color chart of an image;

a storage unit that stores the conversion data and history information [[on]] of the previous measurement of the color chart;

an arithmetic unit that compares the history information with information [[on the]] of new measurement of the color chart to determine number of color patches; and

an updating unit that updates [[the]] a printer profile based on the number of color patches.

2. (currently amended) The image processing apparatus according to claim 1, wherein the history information [[on]] of the previous measurement of the color chart includes the color data, number of times of the measurement, and color regions at the time of the previous measurement.

3. (original) The image processing apparatus according to claim 1, wherein the converting unit includes a table for converting multi-dimensional Lab values into one-dimensional vector values.

4. (original) The image processing apparatus according to claim 1, wherein the arithmetic unit determines the number of color patches based on an evaluation standard, wherein the evaluation standard includes a newly measured patch value and an average of patch values previously measured and stored as the history information.

5. (original) The image processing apparatus according to claim 1, wherein the arithmetic unit determines the number of color patches based on an evaluation standard, wherein the evaluation standard includes a newly measured patch value and a patch value measured last time and stored as the history information.

6. (original) The image processing apparatus according to claim 1, wherein

the arithmetic unit compares a first difference with a second difference, wherein

the first difference is a difference between a newly measured patch value and a patch value measured last time and stored as the history information, and

the second difference is a difference between the newly measured patch value and an average value of the patch values previously measured and stored as the history information, and

when the first difference is equal to or greater than the second difference, the arithmetic unit determines the number of color patches based on a third difference, wherein the third difference is a difference between the newly measured patch value and a patch value measured last but one.

7. (original) The image processing apparatus according to claim 1, wherein

the arithmetic unit compares a first difference with a second difference, wherein

the first difference is a difference between a newly measured patch value and a patch value measured last time and stored as the history information, and

the second difference is a difference between the newly measured patch value and an average value of the patch values previously measured and stored as the history information, and

when the first difference is less than the second difference, the arithmetic unit determines the number of color patches based on a third difference, wherein the third difference is a difference between the newly measured patch value and a measured patch value having a minimum difference from a representative vector indicating a representative color.

8. (original) The image processing apparatus according to claim 4, wherein the evaluation standard is a predetermined value obtained for each neighborhood of whole color regions that constitute a profile.

9. (original) The image processing apparatus according to claim 8, wherein the evaluation standard is a value obtained by combining a first distance, a second distance, and a third distance obtained for each neighborhood of the whole color regions, wherein

the first distance is a distance between Lab values obtained from measuring the color patch

and Lab values obtained from a reference white of an output medium. based on a color difference formula according to CIE1976Lab color system,

the second distance is a distance between the Lab values obtained from measuring the color patch and the Lab values obtained from the reference white, based on a color difference formula according to CIE1994 color difference system, and

the third distance is a difference between the first distance and the second distance.

10. (original) The image processing apparatus according to claim 4, wherein the evaluation standard is a predetermined value obtained for each neighborhood of representative colors including preset colors that constitute a profile.

11. (original) The image processing apparatus according to claim 10, wherein the evaluation standard is a value obtained by combining a first distance, a second distance, and a third distance obtained for each neighborhood of the representative colors, wherein

the first distance is a distance between Lab values obtained from measuring the color patch and Lab values obtained from a reference white of an output medium, based on a color difference formula according to CIE1976Lab color system,

the second distance is a distance between the Lab values obtained from measuring the color patch and the Lab values obtained from the reference white, based on a color difference formula according to CIE1994 color difference system, and

the third distance is a difference between the first distance and the second distance.

12. (original) The image processing apparatus according to claim 11, wherein the representative colors are red, green. black, cyan, magenta, and yellow.

13. (original) The image processing apparatus according to claim 9, further comprising a compressing unit that compresses the combined value.

14. (original) The image processing apparatus according to claim 11, further comprising a compressing unit that compresses the combined value.

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15. (original) The image processing apparatus according to claim 13, wherein the compressing unit compresses the combined value by vector quantization.

16. (original) The image processing apparatus according to claim 14, wherein the compressing unit compresses the combined value by vector quantization.

17. (original) The image processing apparatus according to claim 13, wherein the storage unit stores the compressed value.

18. (original) The image processing apparatus according to claim 14, wherein the storage unit stores the compressed value.

19. (original) The image processing apparatus according to claim 13, wherein the evaluation standard includes a reference vector for the compression of the combined value and an error occurring when the combined value is compressed.

20. (original) The image processing apparatus according to claim 14, wherein the evaluation standard includes a reference vector for the compression of the combined value and an error occurring when the combined value is compressed.

21. (currently amended) An image processing system comprising:
a server that updates a printer profile based on color data obtained from previous measurement of a color chart of an image; and
a client that is connected to the server, wherein
the server includes
a converting unit that performs color conversion of the color data to produce conversion data;
a storage unit that stores the conversion data and history information [[on]] of the previous measurement of the color chart;
an arithmetic unit that compares the history information with information [[on the]] of new

measurement of the color chart to determine number of color patches; and

an updating unit that updates the printer profile based on the number of color patches, and

the client includes

a profile storage unit that stores [[a]] the printer profile ~~created by the server~~; and

a printer driver that converts input color data received from an application into output color

data that can be interpreted by an image forming apparatus.

22. (original) The image processing system according to claim 21, further comprising a

measuring unit that measures the color chart to obtain Lab values, and outputs the Lab values to the

client.

23. (currently amended) An image forming apparatus comprising:

a converting unit that performs color conversion of input data, wherein the input data is color

data obtained from previous measurement of a color chart of an image;

a storage unit that stores the conversion data and history information [[on]] of the previous

measurement of the color chart;

an arithmetic unit that compares the history information with information [[on the]] of new

measurement of the color chart to determine number of color patches;

a profile storage unit that stores a printer profile;

an updating unit that updates the printer profile based on the number of color patches; and

an image forming unit that forms a visible image on a medium.

24. (currently amended) A method of image processing comprising:

performing color conversion of input data, wherein the input data is color data obtained from

previous measurement of a color chart of an image;

storing the conversion data and history information [[on]] of the previous measurement of

the color chart;

comparing the history information with information [[on the]] of new measurement of the

color chart to determine number of color patches; and

updating [[the]] a printer profile based on the number of color patches.

25. (original) The method according to claim 24, wherein the number of color patches is determined based on an evaluation standard, wherein the evaluation standard includes a newly measured patch value and an average of patch values previously measured and stored as the history information.

26. (original) The method according to claim 24, wherein the number of color patches is determined based on an evaluation standard, wherein the evaluation standard includes a newly measured patch value and a patch value measured last time and stored as the history information.

27. (original) The method according to claim 24, wherein the comparing includes

comparing a first difference with a second difference, wherein

the first difference is a difference between a newly measured patch value and a patch value measured last time and stored as the history information, and

the second difference is a difference between the newly measured patch value and an average value of the patch values previously measured and stored as the history information; and

determining the number of color patches based on a third difference, when the first difference is equal to or greater than the second difference, wherein the third difference is a difference between the newly measured patch value and a patch value measured last but one.

28. (original) The method according to claim 24, wherein the comparing includes

comparing a first difference with a second difference, wherein

the first difference is a difference between a newly measured patch value and a patch value measured last time and stored as the history information, and

the second difference is a difference between the newly measured patch value and an average value of the patch values previously measured and stored as the history information; and

determining the number of color patches based on a third difference, when the first difference is less than the second difference, wherein the third difference is a difference between the newly measured patch value and a measured patch value having a minimum difference from a representative vector indicating a representative color.

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29. (original) The method according to claim 25, wherein the evaluation standard is a predetermined value obtained for each neighborhood of whole color regions that constitute a profile.

30. (original) The method according to claim 29, wherein the evaluation standard is a value obtained by combining a first distance, a second distance, and a third distance obtained for each neighborhood of the whole color regions, wherein .

the first distance is a distance between Lab values obtained from measuring the color patch and Lab values obtained from a reference white of an output medium, based on a color difference formula according to CIE1976Lab color system,

the second distance is a distance between the Lab values obtained from measuring the color patch and the Lab values obtained from the reference white, based on a color difference formula according to CIE1994 color difference system, and

the third distance is a difference between the first distance and the second distance.

31. (original) The method according to claim 25, wherein the evaluation standard is a predetermined value obtained for each neighborhood of representative colors including preset colors that constitute a profile.

32. (original) The method according to claim 31, wherein the evaluation standard is a value obtained by combining a first distance, a second distance, and a third distance obtained for each neighborhood of the representative colors, wherein

the first distance is a distance between Lab values obtained from measuring the color patch and Lab values obtained from a reference white of an output medium, based on a color difference formula according to CIE1976Lab color system,

the second distance is a distance between the Lab values obtained from measuring the color patch and the Lab values obtained from the reference white, based on a color difference formula according to CIE1994 color difference system, and

the third distance is a difference between the first distance and the second distance.

33. (original) The method according to claim 30, further comprising compressing the combined value.

34. (original) The method according to claim 32, further comprising compressing the combined value.

35. (original) The method according to claim 33, wherein the evaluation standard includes a reference vector for the compression of the combined value and an error occurring when the combined value is compressed.

36. (original) The method according to claim 34, wherein the evaluation standard includes a reference vector for the compression of the combined value and an error occurring when the combined value is compressed.

37. (currently amended) A computer readable medium tangibly embodying a program that makes of instructions executable by a computer to execute; perform a method comprising:

performing color conversion of input data, wherein the input data is color data obtained from previous measurement of a color chart of an image;

storing the conversion data and history information [[on]] of the previous measurement of the color chart;

comparing the history information with information [[on the]] of new measurement of the color chart to determine number of color patches; and

updating [[the]] a printer profile based on the number of color patches.